

CLAIMS

1. System for generating and transmitting an application packet group, the system comprising:

a transmitter, for transmitting an application packet group to at least one end-user, at least some of the at least one end-user have a display unit and a control unit, the control unit is configured to control the display unit;

a controller, for selecting application code portions to be embedded in application packets and to provide the transmitted application packet group, the application packet group comprising application packets embedding the selected code portions;

wherein the control unit of each end-user is configured to process the application packets and accordingly (i) display at least a portion of a visual object on the display unit, or (ii) react to events that are related to the display of the at least portion of the visual object on the display unit.

2. The system according to claim 1, wherein some application packets further include code for manipulating the at least portion of the visual object.

3. The system according to claim 1 wherein the application packets are self-contained.

4. The system according to claim 1 wherein the selection of application code portions is responsive to an identity of media packets being provided to at least one end-user.

5. The system according to claim 1 wherein an end-user control unit controls a filtering process of media packets and controls a display visual objects in response to events that are initiated by an end-user.

6. The system according to claim 5 wherein the selection is responsive to the identity of filtered media packets.

7. The system according to claim 1 wherein an application packet group comprises application packets that allow for displaying a sequence of logically linked visual objects.

8. The system according to claim 1 wherein the control unit is further configured to filter application packets allowing for a display of a selected visual object and for responding to events related to the display of the selected visual object.

9. The system according to claim 8 wherein the control unit filters application packets is responsive to events that were previously initiated by an end-user.

10. The system according to claim 1 wherein each control unit receives the application packets via a tuner, and wherein the system is further configured to adjust application packets transmission parameters in response to a status of the tuner.

11. The system according to claim 1 wherein each control unit receives application packets and media packets via a tuner, and wherein the system is further configured to adjust application packets transmission parameters in response to a status of the tuner.

12. The system according to claim 1 further configured to repeatedly transmit the application packet groups.

13. The system according to claim 1 wherein at least some media signals and application packets are MPEG compliant.

14. The system according to claim 1 wherein the application packets are included within data elementary streams.

15. The system according to claim 1 further adapted to download an interactive software to the set-top control unit, the interactive software allowing the control unit to receive, filter and process application packets.

16. The system according to claim 1 wherein at least some applications are advertisements.

17. The system according to claim 1 wherein the control unit is a digital set-top-box and the display unit is a television set.

18. The system according to claim 1 wherein an application packet group includes application packets allowing for executing an application.

19. The system according to claim 1 wherein application packets comprise an identification IID field.

20. The system according to claim 1 wherein at least some of the application packets comprise a display period field.

21. The system according to claim 1 wherein at least some of the application packets comprise a bit map of a portion of a visual object.

22. The system according to claim 1 wherein at least some of the application packets further comprise a location field indicative of a location of the portion of the visual object on the display unit.

23. System for provision of media packets and application packets to at least one group of end-users, each end-user has a display unit and a control unit for controlling the display unit, the system comprising:
a router, coupled to the control unit of the end-users, the router operative to receive application packets and media packets, and to provide group-associated application packets and media packets to control units of a group of end-users;

a session manager, coupled to the router, the session manager providing routing instructions to said router, for dynamically selecting group-associated application packets and media packets out of the received application packets and media packets;

wherein the control unit of each end-user is configured to process the application packets and accordingly (i) display at least a portion of a visual object on the display unit, or (ii) react to events that are related to the display of the at least portion of the visual object on the display unit.

24. The system according to claim 23, wherein some application packets further include code for manipulating the at least portion of the visual object.

25. The system according to claim 23 wherein the application packets are self-contained.

26. The system according to claim 23 wherein the dynamic selection is responsive to the identity of media packets provided to the group of end-users.

27. The system according to claim 23 wherein each control unit is configured to filter the media packets and to display visual objects in response to events that are initiated by an end-user.

28. The system according to claim 27 wherein the dynamic selection is responsive to the identity of filtered media packets.

29. The system according to claim 23 wherein each group-associated application packet including application packets that allow for displaying at least one sequence of logically linked visual objects.

30. The system according to claim 23 wherein the control unit is further configured to filter application packets allowing for a display of a selected visual

object and for responding to events related to the display of the selected visual object.

31. The system according to claim 30 wherein the control unit filters application packets is responsive to events that were previously initiated by an end-user.

32. The system according to claim 23 wherein each control unit receives the application packets via a tuner, and wherein the system is further configured to modulate application packets in response to a status of the tuner.

33. The system according to claim 23 wherein each control unit receives the application packets and the media packets via a tuner, and wherein the system is further configured to modulate application packets in response to a status of the tuner.

34. The system according to claim 23 further configured to repeatedly transmit the group-associated application packets.

35. The system according to claim 23 further comprising at least one media degradation unit, for compressing media packets.

36. The system according to claim 23 wherein at least some of the media signals and application packets are MPEG compliant.

37. The system according to claim 23 wherein the application packets are included within data elementary streams.

38. The system according to claim 23 further adapted to download an interactive software to the set-top control unit, the interactive software allowing the control unit to receive, filter and process application packets.

39. The system according to claim 23 further comprising network transmitters for transmitting to each group of end-users group-associated application packets over a bandwidth limited media.

40. The system according to claim 23, further comprising a dynamic network restructuring unit, coupled to the network transmitters, for providing channel managing commands to each said network transmitters, receiving group-associated application packets from said router.

41. The system according to claim 23, wherein said session manager receives a plurality of session requests, for executing a session through the system, the session manager either allows or denies each said session requests, said session manager provides resource allocation parameters for each said allowed sessions.

42. The system according to claim 23 wherein each group associated application packets comprise of at least one application packet groups, each application packet groups comprises application packets allowing for executing an application.

43. The system according to claim 23, wherein some of the application packets and some of the media packets are non-addressable packets, wherein some media packets are addressable packets, wherein the router comprising:

- a plurality of input ports, including at least one non-addressable stream input port;
- a plurality of non-addressable stream output ports;
- a multiple port switch, connected between said non-addressable stream input ports and said non-addressable stream output ports;
- said multiple port switch directing a non-addressable application packets and media packets, received from a selected one of said at least one non-addressable stream input ports, to at least a selected one of said at least one non-addressable stream output ports,
- said multiple port switch selecting said selected non-addressable stream output port according to the type and identity of said selected non-addressable

stream input port and the identity information embedded in said non-addressable application packet.

44. The system according to claim 43, further comprising at least one addressable stream communication port, connected to said multiple port switch, said multiple port switch directing an addressable media packet, received from a selected one of said at least one addressable stream communication ports, to at least a selected one of said at least one non-addressable stream output ports.

45. The system according to claim 43, wherein the selected non-addressable stream output port encapsulates an addressable media packet in a non-addressable stream packet, when the addressable packet is received from one of said at least one addressable stream input ports.

46. The system according to claim 43, wherein MPEG transport packets are encapsulated into communication packets respective of the communication protocol of said multiple port switch.

47. The system according to claim 43, wherein said at least one non-addressable stream input port comprises a multiple program transport interface and wherein said at least one non-addressable stream output port comprises a multiple program transport interface.

48. The system according to claim 43, further comprising a plurality of stream processors, each said stream processor being connected between said multiple port switch and a respective one of said non-addressable stream output ports.

49. The system according to claim 43 wherein the control unit is a digital set-top-box.

50. The system according to claim 43 wherein application packets are arranged in at least one application packet group; wherein each application packet group comprises application packets allowing for executing an application.

51. The system according to claim 43 wherein application packets comprise an identification IID field.

52. The system according to claim 43 wherein at least some of the application packets comprise a display period field.

53. The system according to claim 43 wherein at least some of the application packets comprise a bit map of a portion of a visual object.

54. The system according to claim 43 wherein at least some of the application packets further comprise a location field indicative of a location of the portion of the visual object on the display unit.

55. A set-top-box configured to interact with a broadband media system via a communication medium, the set-top-box comprising:

- a tuner, coupled to communication channel, for receiving application packets and media packet;
- a filter, coupled to the tuner, for filtering received application packets and media packets, and providing the application packets to a processor;
- a processor, coupled to a display unit, configured to process the application packets and accordingly (i) to determine a display at least a portion of visual objects on the display unit, or (ii) react to events that are related to the display of the at least portions of the visual objects on the display unit.

56. The set-top-box according to claim 55 wherein the filter comprises an MPEG parser.

57. The set-top-box according to claim 55, wherein the application packets further include code for manipulating the at least portion of the visual object.

58. The set-top-box according to claim 55 wherein the application packets are self-contained.

59. The set-top-box according to claim 55 wherein the set-top-box is configured to filter the media packets and to display visual objects in response to events that are initiated by an end-user.

60. The set-top-box according to claim 55 wherein application packets are arranged in at least one application packet group, wherein each application packet group comprises application packets that allow for displaying a sequence of logically linked visual objects.

61. The set-top-box according to claim 55 wherein the set-top-box is further configured to filter application packets allowing for a display of a selected visual object and for responding to events related to the display of the selected visual object.

62. The set-top-box according to claim 61 wherein the filter filters application packets in response to events that were previously initiated by an end-user.

63. The set-top-box according to claim 55 further adapted to transmit, via an upstream channel, a status of the tuner to a system for providing application packets.

64. The set-top-box according to claim 55 wherein application packets are arranged in at least one application packet group, wherein each application packet group comprises application packets allowing for executing an application.

65. System for allowing an end-user to interact with an application provider, the system comprising a broadband multimedia system, configured to (a) receive a plurality of media packets and application packets from media sources and application providers, (b) select media packets and application packets to be provided to a plurality of end-users, via a communication medium; (c) provide the selected media packets and application packets to a plurality of end-users;

wherein the broadband multimedia system is adapted to be coupled to the plurality of end-users via a communication medium;

wherein the application packets allow for displaying at least a portion of a visual object on display units of end-users and for reacting to events that are related to the display of the at least portions of the visual objects on the display unit; and

wherein an execution of an application involves selecting application packets out of a plurality of application packets broadcast over the communication link.

66. The system according to claim 65 wherein application packets are arranged in at least one application packet group, wherein each application packet group includes application packets allowing for executing an application.

67. The system according to claim 65, wherein some application packets further include code for manipulating the at least portion of the visual object.

68. The system according to claim 65 wherein the application packets are self-contained.

69. The system according to claim 65 wherein the dynamic selection is responsive to the identity of media packets provided to end-users.

70. The system according to claim 65 wherein each end-user has a control unit coupled between the communication media and a display unit, and each control unit is configured to filter the media packets and to display visual objects in response to events that are initiated by end-users.

71. The system according to claim 70 wherein the dynamic selection is responsive to the identity of filtered media packets.

72. The system according to claim 65 wherein each of the application packets are arranged in groups and wherein each application packet group comprises application packets that allow for displaying a sequence of logically linked visual objects.

73. The system according to claim 72 further configured to repeatedly transmit groups of application packets.

74. The system according to claim 65 wherein each end-user has a control unit coupled between the communication media and a display unit, wherein the control unit is configured to filter application packets allowing for a display of a selected visual object and for responding to events related to the display of the selected visual object.

75. The system according to claim 74 wherein the control unit filters application packets in response to events that were previously initiated by an end-user.

76. The system according to claim 65 wherein each end-user has a tuner for receiving application packets and the system is further configured to modulate application packets in response to a status of the tuner.

77. The system according to claim 65 wherein each end-user has a tuner for receiving application packets and media packets, and wherein the system is further configured to modulate application packets in response to a status of the tuner.

78. The system according to claim 65 further configured to repeatedly transmit the application packets.

79. The system according to claim 65 further configured to repeatedly transmit the application packets.

80. The system according to claim 65 further comprises at least one media degradation unit, for compressing media packets.

81. The system according to claim 65 wherein at least some of the media signals and application packets are MPEG compliant.

82. The system according to claim 65 wherein the application packets are included within data elementary streams.

83. The system according to claim 65 further adapted to download an interactive software to the set-top control unit, the interactive software allowing the control unit to receive, filter and process application packets.

84. A method for generating and providing application packets to end-users, each end-user has a display unit and a control unit, the control unit configured to control the display unit, the method comprising the steps of:

- selecting application code portions to be embedded in application packets;
- multiplexing the selected application code portions to form at least one application packet group;
- wherein the control unit of each end-user is configured to process the application packets of an application packet group out of the at least one application packet group, and accordingly (i) display at least a portion of a visual object on the display unit, or (ii) react to events that are related to the display of the at least portion of the visual object on the display unit.

85. The method according to claim 84 wherein an application packet group comprises application packets allowing for executing an application.

86. The method of claim 84 further comprising a step of multiplexing the at least one application packet groups with media packets to generate a multiplexed sequence.

87. The method of claim 84 further comprising a step of transmitting the at least one application packet groups to end-users.

88. The method according to claim 84, wherein some application packets further include code for manipulating the at least portion of the visual object.

89. The method according to claim 84 wherein the application packets are self-contained.

90. The method according to claim 84 further comprising a step of monitoring end-user characteristics and wherein the step of selecting is responsive to the monitored end-user characteristics.

91. The method according to claim 90 wherein end-user characteristics are selected from the group consisting of:

- end-user profile;
- end-user behavior pattern; and
- identity of media packets provided to the end-user.

92. The method according to claim 90 wherein end-user characteristics are end-user reception characteristics.

93. The method according to claim 84 wherein each end-user has a control unit coupled to and controlling a display unit, wherein each control unit is configured to filter the media packets and to display visual objects in response to events that are initiated by an end-user.

94. The method according to claim 84 wherein the selection is responsive to the identity of filtered media packets.

95. The method according to claim 84 wherein group of media packets comprises application packets that allow for displaying a sequence of logically linked visual objects.

96. The method according to claim 84 wherein each end-user has a control unit coupled to and controlling a display unit, and wherein the control unit is further configured to filter application packets allowing for a display of a selected visual object and for responding to events related to the display of the selected visual object.

97. The method according to claim 96 wherein the control unit filters application packets in response to events that were previously initiated by an end-user.

98. The method according to claim 84 wherein each control unit receives the application packets via a tuner, and wherein the system is further configured to adjust application packets transmission characteristics in response to a status of the tuner.

99. The method according to claim 84 wherein each control unit receives the application packets and the media packets via a tuner, and wherein the system is further configured to adjust application packets transmission characteristics in response to a status of the tuner.

100. The method according to claim 84 further configured to repeatedly transmit at least one application packet groups.

101. The method according to claim 84 wherein at least some of the application packets are MPEG compliant.

102. The method according to claim 84 wherein the application packets are included within data elementary streams.

103. The method according to claim 84 wherein the step of selecting is preceded by downloading an interactive software to control units of the end-users, wherein the interactive software allowing the control unit to receive, filter and process application packets.

104. A method for providing application packets to at least one group of end-users, the method comprising the steps of:

receiving application packets and media packets;

dynamically selecting, for each group of end-users, group-associated media packets and application packets;

providing to each group of end-users, out of the at least one group of end-users, the corresponding group-associated media packets and application packets;

wherein application packets allow either for displaying at least a portion of a visual object on a display unit, or for reacting to events that are related to the display of the at least portions of the visual objects on the display unit.

105. The method according to claim 104 wherein an application packet group includes application packets allowing for executing an application.

106. The method according to claim 104 wherein the at least one group of end-users are coupled to an application provider via a broadband multimedia system, and wherein the step of dynamically selecting comprising selecting session requests, for executing a session in which the broadband multimedia system provides application packets to a group of end-users.

107. The method according to claim 104 wherein the at least one group of end-users is coupled to an application provider via a broadband multimedia system, and the step of selecting is preceded by a step of allocating the broadband multimedia system resources for providing the group associated application packets.

108. The method according to claim 104, wherein some application packets further include code for manipulating the at least portion of the visual object.

109. The method according to claim 104 wherein the application packets are self-contained.

110. The method according to claim 104 wherein the dynamic selection is responsive to the identity of media packets provided to the group of end-users.

111. The method according to claim 104 wherein each end-user has a control unit coupled to and controlling a display unit, wherein each control unit is configured to filter the media packets and to display visual objects in response to events that are initiated by an end-user.

112. The method according to claim 104 wherein the dynamic selection is responsive to the identity of filtered media packets.

113. The method according to claim 104 wherein each group-associated application packets include application packets that allow for displaying a sequence of logically linked visual objects.

114. The method according to claim 104 wherein each end-user has a control unit coupled to and controlling a display unit, and wherein the control unit is further configured to filter application packets allowing for a display of a selected visual object and for responding to events related to the display of the selected visual object.

115. The system according to claim 114 wherein the control unit filters application packets in response to events that were previously initiated by an end-user.

116. The method according to claim 104 wherein each control unit receives the application packets via a tuner, and wherein the system is further configured to modulate application packets in response to a status of the tuner.

117. The method according to claim 104 wherein each control unit receives the application packets and the media packets via a tuner, and wherein the system is further configured to modulate application packets in response to a status of the tuner.

118. The method according to claim 104 further configured to repeatedly transmit the group-associated application packets.

119. The method according to claim 104 further comprising at least one media degradation unit, for compressing media packets.

120. The method according to claim 104 wherein at least some of the media signals and application packets are MPEG compliant.

121. The method according to claim 104 wherein the application packets are included within data elementary streams.

122. The method according to claim 104 wherein the step of dynamically selecting is preceded by downloading an interactive software to control units of the end-users, wherein the interactive software allows the control unit to receive, filter and process application packets.

123. The method of claim 104 wherein at least some of the media packets and the application packets are non-addressable packets; and wherein the method further comprising the steps of:

receiving non-addressable packets from an input port selected from at least one non-addressable stream input port;

dynamically selecting packets out of the received packets to be provided to at least one of a plurality of non-addressable stream output ports; whereas at least one non-addressable stream output port is coupled to at least one group of end-users; and

directing said non-addressable packets to said selected non-addressable stream output port.

124. The method according to claim 123 wherein the selection is responsive to the type and identity of said selected input port and the identity information embedded in said received packet.

125. The method according to claim 123, wherein said input port is further selected from at least one addressable stream input port.

126. The method according to claim 123, further comprising the step of prioritizing the directing of the session associate with said received packet.

127. The method according to claim 123, further comprising the step of encapsulating said packet in a non-addressable stream packet, when said packet is received from one of said at least one addressable stream input ports.

128. The method according to claim 123, further comprising the step of encapsulating said packet in a addressable stream packet, when said packet is received from one of said at least one non-addressable stream input ports.

129. The method according to claim 123 wherein at least some of the media service conveying packets are MPEG compliant.

130. The method according to claim 123 wherein the step of selecting comprising selecting session requests, for executing a session in which application packets are to be provided to an associated group of end-users.

131. The method according to claim 130 wherein the step of selecting is preceded by a step of allocating system resources for providing the application packets.

132. A method for executing an application by an end-user, the execution involves displaying visual objects on an end-user display unit and reacting to events initiated by an end-user, the method comprising the step of:

- receiving a plurality of media packets and application packets;
- filtering application packets according to a criterion;
- processing the filtered application packets and accordingly displaying a visual object; and
- responding to events generated by an end-user by adjusting the filter for filtering application packets.

133. The method according to claim 132, wherein some application packets further include code for manipulating the at least portion of the visual object.

134. The method according to claim 132 wherein the application packets are self-contained.

135. The method according to claim 132 further comprising a step of responding to events generated by an end-user by transmitting upstream information.

136. The method according to claim 132 further comprising a step of filtering media packets, processing the filtered media packets and displaying visual objects accordingly.

137. The method according to claim 132 wherein the received application packets include application packets associated to the filtered media packets.

138. The method of claim 132 wherein the received application packets include application packets that allow for displaying an advertisement.

139. The method of claim 132 wherein the received application packets include application packets that allow for displaying a sequence of logically linked visual objects.

140. The method of claim 139 further comprising a step of responding to events generated by an end-user by transmitting upstream information, only in response to a display of some visual objects out of the sequence of logically linked visual objects.

141. The method according to claim 132 wherein application packets are received via a tuner, and the method comprising a step of transmitting upstream information reflecting the status of the tuner.

142. The method according to claim 132 wherein the received application packets comprise an application packet group.

143. The method of claim 142 wherein the application packet groups is repeatedly transmitted.

144. The method according to claim 142 wherein the group comprises application packets allowing for executing an application.

145. The method according to claim 142 wherein the group comprises application packets allowing for displaying a sequence of logically linked visual objects.

146. The method according to claim 142 wherein at least some of the media signals and application packets are MPEG compliant.

147. The method according to claim 142 wherein the application packets are included within data elementary streams.

148. The system according to any claim out of claims 1, 23, 43 and 65 wherein at least one application packets embeds a portion of a code for displaying an advertisement.

149. The method according to any claim out of claims 84, 104, 123 and 132 wherein at least one application packets embeds a portion of a code for displaying an advertisement.